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## A MARS YARD IN THE MUSEUM: RESEARCH, EDUCATION AND OUTREACH

**Abstract**

Established at the Powerhouse Museum venue of the Museum of Applied Arts and Sciences (MAAS) in Sydney, Australia, the Mars Yard is a facility unique in the Southern Hemisphere. It brings real engineering and scientific research, school education programs, science communication research and public outreach together in an open ‘living lab’ in the public space of the museum, coupled with an on-site digital learning centre.

Created in partnership between the Australian Centre for Astrobiology (University of New South Wales), the Australian Centre for Field Robotics (University of Sydney) and the MAAS, the Mars Yard was originally created as the centrepiece of Pathways to Space, the first education project funded in 2010 under the Australian Space Research Program. A purpose-built 140sq. metre high fidelity recreation of the Martian surface, the Mars Yard functions as both a public exhibit and a test bed for robotics and astrobiology research. It is also incorporated into school education programs offered nationally and internationally via the internet using the resources of the museum’s Thinkspace digital learning centre.

Initially funded by two successive competitively-won grants totalling almost Aus\$4million, *operation of the Mars Yard is sustained as part of the museum’s Mars Lab education programs. Research grants, corporate hire for team-building and similar programs and modest fees for educational programs allow the Mars Yard to continue as a resource for the*

This paper will explore the significant impact that Mars Yard and its associated facilities have had upon the museum’s education and visitor programs. It will outline their development, from the original Pathways to Space concept to today’s Mars Lab program, which boasts three research-grade rovers operating in its “Martian environment”. It will examine the education programs, which have developed from hands-on on-site classes, to remotely accessed interactive lessons available to both Australian and international schools, and discuss the significant results that have been obtained from the science communication and education research conducted as part of these programs. As an exhibit openly visible to museum visitors while in operation, the outreach value of the Mars Yard will also be considered. Finally, the complex development of the Mars Yard facilities and programs have not been without their issues and these-and their solutions- will also be discussed.